

CONNECTICUT'S ENDANGERED SPECIES PROGRAM

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Connecticut is a small state, even by New England standards, with only 5,009 square miles. It is, however, a state of remarkable natural diversity. Traveling a distance of just 60 miles inland from Long Island Sound, one experiences an elevational change from sea level to slightly more than 2,300 feet. In this distance a variety of habitats, including saltmarshes, bogs, and upland woods, can be encountered. It is apparent, however, that much of this land has been altered by industrialization and urbanization, effectively destroying actual and potential habitats for many of the state's unique species of plants and animals. With more habitat disappearing each year due to these impacts, there is increasing reason for concern about the state's rare, threatened or endangered plant species.

The citizens of Connecticut have been aware of rare plant destruction in the state for over a hundred years. According to Daniel Cady Eaton in *Ferns of the United States of America and British North American Possessions*, a law was passed in 1869 to protect the Hartford or Climbing Fern, *Lygodium palmatum* (Bernh.) Sw. (Eaton, 1879, p. 5):

"The carefully pressed fronds are much used as an article of parlor ornament or decoration in the cities of Connecticut, and the custom is spreading to other States. The plant is gathered in August and September, and is exposed for sale in Hartford, New Haven, and New York, in great quantities, both in the fresh condition and as pressed specimens. Indeed, the gathering of it became so destructive, that in 1869 the legislature of Connecticut passed a special law for its protection. This law has since been codified in the revision of the statutes of 1875; and under title XX, chapter iv., section 22, it is made an offense, punishable by a fine not exceeding one hundred dollars, or imprisonment not more than twelve months, or both, to wilfully cut, destroy, or take away from the land of another person any 'cranberries, *creeping-fern*, crops, shrub, fruit, or vegetable production.' [Eaton's italics]

This is probably the only instance in statute law where a plant has received special legal protection solely on account of its beauty." In 1974 the State of Connecticut created a General Fund position for a Biologist whose main responsibility is to identify and evaluate

the state's rare, threatened, or endangered species. After two years of literature search, herbarium study and extensive field work, the Connecticut Geological & Natural History Survey of the Natural Resources Center, Department of Environmental Protection, published the *Rare and Endangered Species of Connecticut and Their Habitats* (Dowhan & Craig, 1976), which listed 81 vertebrate taxa as well as 275 vascular plant taxa including eight of the ten species proposed in the June 16, 1976 Federal Register. At that time no specimens from Connecticut had been seen of the Ram's-head Ladyslipper, *Cypripedium arietinum* R. Br. (a single sheet has since been located at the U. S. National Herbarium) or of *Panicum aculeatum* Hitchc. & Chase (the specimens from Connecticut had been incorrectly identified).

In this document, the *Rare and Endangered Species of Connecticut and Their Habitats*, Connecticut set forth the basis for its Ecoregion Program. Simply stated, this is a multidisciplinary land classification system based upon such parameters as landforms, bedrock geology, soils, hydrology, climatology, and biology. It is a hierarchial system including three main levels of integration.

The first level is the Ecoregion. These are apolitical regions of distinctive landscapes and regional climate as expressed by vegetation patterns and composition and by the presence or absence of certain indicator species or species groups. Eleven ecoregions are described in this publication. There are also three subregions delineated in the western part of the state based upon the underlying marble bedrock.

The next level of integration is the Land System. Land Systems are distinguished by recurring patterns of landforms, soils, and vegetation chronosequences (successional stages). Since 1976, the work of the Connecticut Geological and Natural History Survey has concentrated on the North Central Lowlands Ecoregion, an area with, preliminarily, four Land Systems. Two of these are fairly distinct, the Trap Rock Ridge System and the Riverine Land System. The other two, the Till Midlands System and the Terrace and Plains System, are less distinct and need further evaluation.

The third level is the Land Type. This is an area which is characterized by fairly homogeneous combinations of soils and potential vegetation development. At this level the soils-vegetation relationships are especially pronounced. The Riverine Land Systems in the North Central Lowlands Ecoregion and the South Central Low-

lands Ecoregion are presently being investigated by biologists from the Department of Environmental Protection's Natural Resources Center.

This program will be useful to land planners and managers because it will give them a sound, multidisciplinary basis for their decisions. The program should also have important applications to endangered species work. Herbarium labels frequently give names of towns for locality information and little else. By knowing the Land Type in which a species is most likely to occur, predictions can be made of places in which to search for historic as well as for previously unknown populations.

The Ecoregion Program will also be helpful in the reintroduction of rare plants to areas where they were once known. A pilot study is being considered for *Panax quinquefolius* L. (Ginseng), once known from 33 towns within Connecticut and now thought to be extant in 14 towns. Fruits will be harvested from native plants this fall and seedlings will be grown in the University of Connecticut greenhouses until they can be transplanted into the wild. By knowing the Land Type in which Ginseng is mostly likely to occur, the best localities for reintroduction to towns where it was historically known can be predicted. All work of this nature will be thoroughly documented.

In 1978 reports on Rare and Endangered Vascular Plant Species for each of the New England states were prepared by members of the New England Botanical Club's Endangered Species Committee and published by the U. S. Fish & Wildlife Service. The Connecticut report lists 282 vascular plant taxa. Sixteen were dropped from the 1976 Connecticut Geological & Natural History Survey list and 23 were added for consideration. Additional information received concerning plants will be used in the preparation of an updated state publication on rare and endangered plants. This revised document, with information for naturalists as well as professional botanists is slated for completion in 1981. Data files are also being established for all species of plants and animals with which the Endangered Species Program is concerned.

My work with the Connecticut Geological & Natural History Survey's Endangered Species Program has involved both continued field work and educational efforts. Much of the field work revolves around relocating historic populations as well as verifying new stations. Along educational lines, the Connecticut Geological & Natu-

ral History Survey has recently been awarded a small grant from the New England Wild Flower Society to put together a self contained slide and cassette program on Connecticut's rare and endangered plants and their habitats. This will be available to the people of the state through the Department of Environmental Protection's Information and Education Section. Through this program, we hope to increase public awareness about the needs of endangered plant species and programs for their protection.

With the signing of a Federal Cooperative Agreement for endangered species work between the U. S. Fish & Wildlife Service and the Connecticut Department of Environmental Protection, new impetus has been given to our Endangered Species Program. This Cooperative Agreement will be the first in the nation to include plants under the terms of the agreement. Our state program has the potential for sound endangered species management within a state which is rapidly growing in population and industry.

LITERATURE CITED

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